



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 317 048 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
07.06.2006 Bulletin 2006/23

(51) Int Cl.:
H02K 3/52 (2006.01) H02K 9/00 (2006.01)

(43) Date of publication A2:
04.06.2003 Bulletin 2003/23

(21) Application number: **02025610.3**

(22) Date of filing: **18.11.2002**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
IE IT LI LU MC NL PT SE SK TR**
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **28.11.2001 JP 2001361915**
05.06.2002 JP 2002163687

(71) Applicant: **NISSAN MOTOR CO., LTD.**
Yokohama-shi,
Kanagawa 221-0023 (JP)

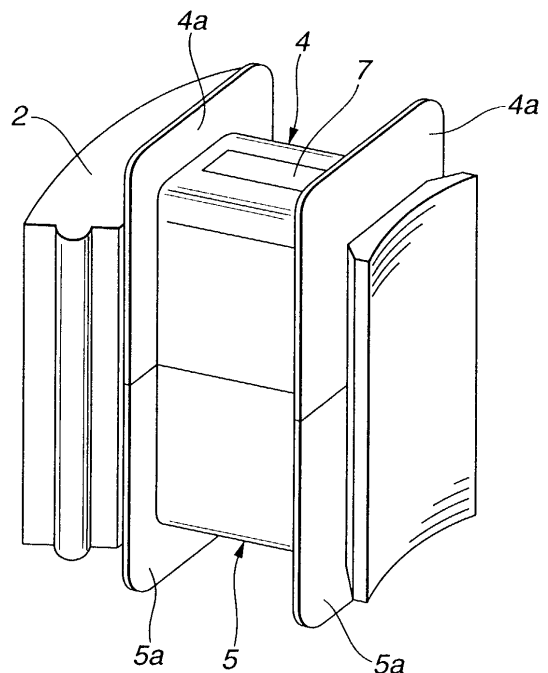
(72) Inventors:
• **Uchiyama, Mitsuo**
Yokosuka-shi,
Kanagawa 239-0823 (JP)
• **Sakata, Naoshi**
Tokyo 111-0032 (JP)
• **Owada, Yu**
Kanagawa, 238-0056 (JP)

(74) Representative: **Grünecker, Kinkeldey,**
Stockmair & Schwanhäusser
Anwaltssozietät
Maximilianstrasse 58
80538 München (DE)

(54) **Connecting member for segmented motor stator**

(57) A stator for a motor is a segmented type including a plurality of stator segments. Each stator segment includes a core segment forming a stator core, a stator winding including a first winding wound in one direction on the core segment, and a second winding wound in the opposite direction on the core segment, and an insulating member interposed between the core segment and the stator winding. A connecting member is formed integrally in the insulating member, and arranged to electrically connect inner ends of the first and second windings to form a single continuous winding.

FIG.3A



EP 1 317 048 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 02 5610

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	PATENT ABSTRACTS OF JAPAN vol. 011, no. 055 (E-481), 20 February 1987 (1987-02-20) & JP 61 214748 A (NORIYOSHI OKURA), 24 September 1986 (1986-09-24) * abstract *	1,29	INV. H02K3/52 H02K9/00
A	----- US 5 986 374 A (KAWAKAMI ET AL) 16 November 1999 (1999-11-16) * column 6, line 10 - line 48; figures 6-8 * * column 9, line 15 - line 67; figures 21-23 *	1,29	
A	----- US 4 038 573 A (HILLYER ET AL) 26 July 1977 (1977-07-26) * column 8, line 55 - column 10, line 18; figures 5-9 *	1,29	
A	----- EP 0 884 825 A (TOYOTA JIDOSHA KABUSHIKI KAISHA) 16 December 1998 (1998-12-16) * abstract; figures 1-4 *	1,29	TECHNICAL FIELDS SEARCHED (IPC) H02K
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 3 February 2006	Examiner Zanichelli, F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

1
EPO FORM 1503 03.82 (P04001)

**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-31



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-31

A stator comprising:

- a core member;
- a stator winding including a first winding wound in one direction and a second winding wound in the opposite direction;
- an insulating member interposed between the core member and the stator winding;
- a connecting member formed integrally in the insulating member for connecting the inner ends of the first and second windings.

2. claim: 32

A stator comprising:

- a core member including a plurality of core segments with slots formed between adjacent core segments;
- a plurality of stator windings wound around the core segments so that a coolant passage is formed;
- spacers inserted in the slots, to abut against the stator windings.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 02 5610

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-02-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 61214748	A	24-09-1986	NONE	

US 5986374	A	16-11-1999	AU 7226996 A	11-08-1997
			EP 0875091 A1	04-11-1998
			WO 9726700 A1	24-07-1997
			US 6011339 A	04-01-2000

US 4038573	A	26-07-1977	CA 1064088 A1	09-10-1979
			DE 2617156 A1	04-11-1976
			FR 2309022 A1	19-11-1976
			NL 7604024 A	25-10-1976
			SE 420034 B	07-09-1981
			SE 7604607 A	22-10-1976

EP 0884825	A	16-12-1998	DE 69820534 D1	29-01-2004
			DE 69820534 T2	23-09-2004
			US 6072259 A	06-06-2000
